

REMARKS

By this amendment, Applicants have not amended the claims. As a result, claims 20-30 remain pending in this application. Reconsideration in view of the following remarks is respectfully requested.

In the Office Action, claims 22, 23, 26, and 27 are objected to as being dependent upon a rejected base claim. Applicants thank the Examiner for the indication of allowable subject matter in these claims.

However, the Office rejects claims 20 and 21 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 4,661,175 (Kuphal) in view of U.S. Patent No. 6,563,141 (Dawson). In order to establish a *prima facie* case of obviousness, the Office must show that (1) every feature is taught or suggested by Kuphal and/or Dawson; (2) Kuphal, Dawson, or generally available knowledge suggests or motivates the modification(s); and (3) one would have a reasonable expectation of success. MPEP 2143. Because the Office fails to establish a *prima facie* case of obviousness, Applicants respectfully request withdrawal of the rejections of claims 20 and 21 for the following reasons.

With respect to claim 20, initially, Applicants respectfully submit that the Office misinterprets the teachings of Kuphal. In particular, interpreting Kuphal only for the purposes of this response, Applicants note that Kuphal provides "a double hetero-structure of InGaAsP/InP, or, alternatively of InGaAs/InP." Abstract. To this extent, Kuphal's double hetero-structure comprises an "active layer of either InGaAsP..., or, alternatively, of InGaAs." Col. 3, lines 18-20. The Office interprets the InP layer of Kuphal as allegedly disclosing Applicants' claimed buffer layer.

In sharp contrast, Applicants' claimed invention comprises a nitride based heterostructure device. By definition, the active portion of a nitride based heterostructure device comprises nitrogen, which is absent from any portion of either embodiment of Kuphal's device, let alone the active layer. To this extent, Applicants respectfully submit that a design for a double heterostructure comprising an active layer of InGaAs with or without P is unrelated to a nitride based heterostructure device. As a result, Kuphal does not disclose, *inter alia*, the inclusion of a buffer layer comprising In in a nitride based heterostructure device.

Further, the Office proposes to modify Kuphal's device by including the substrate and layered structure of Dawson. Dawson provides a GaN-based device. See, e.g., col. 4, lines 9-10. To this extent, the Office apparently proposes to create a device that includes Kuphal's InP layer below a multilevel quaternary structure comprising multiple layers, each of which includes nitrogen. However, Kuphal provides a device that lacks any layers that include nitrogen. Applicants respectfully submit that the device proposed by the Office would violate the teachings of Kuphal by substantially altering the design and operational characteristics of Kuphal's device. As a result, Applicants respectfully submit that such a modification is improper.

Still further, the Office provides no support, either in Kuphal, Dawson, or the generally available knowledge for the proposition that such a modification would create "a semiconductor device with increased performance" or that one would have a reasonable expectation of success in creating the semiconductor device.

In light of the above, Applicants respectfully submit that the Office has failed to state a *prima facie* case of obviousness. As a result, Applicants respectfully request withdrawal of the

rejection of claim 20 and claim 21, which depends therefrom, as allegedly being unpatentable over Kuphal in view of Dawson.

Further, the Office rejects claims 24-25 and 28-30 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kuphal in view of Dawson further in view of Japanese Patent No. 11-243251 (Sasanuma).

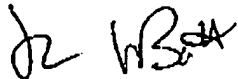
With respect to claims 24 and 29, Applicants note that the Office relies on the same interpretation of Kuphal and combination of Kuphal and Dawson as discussed above with reference to claim 20. To this extent, Applicants herein incorporate the arguments presented above with respect to claim 20. As a result, Applicants respectfully request withdrawal of the rejection of claim 24 and claims 25 and 28, which depend therefrom, and claim 29 and claim 30, which depends therefrom, as allegedly being unpatentable over Kuphal in view of Dawson further in view of Sasanuma.

Applicants submit that each of the pending claims is patentable for one or more additional unique features. To this extent, Applicants do not acquiesce to the Office's interpretation of the claimed subject matter or the references used in rejecting the claimed subject matter.

Additionally, Applicants do not acquiesce to the Office's combinations and modifications of the various references or the motives cited for such combinations and modifications that were not specifically addressed herein. These features and the appropriateness of the Office's combinations and modifications have not been separately addressed herein for brevity. However, Applicants reserve the right to present such arguments in a later response should one be necessary.

In light of the above, Applicants respectfully submit that all claims are in condition for allowance. Should the Examiner require anything further to place the application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the number listed below.

Respectfully submitted,



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